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FOREIGN CROPS AND MARKETS



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FEATURE ARTICLE

REGIONAL AGRICULTURE IN CHINA

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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF AGRICULTURAL ECONOMICS

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Cotton	Kobe	Japan
Cotton	Cairo	Egypt and Sudan
Fruit	London	Europe
Tobacco	Berlin	Europe

L A T E C A B L E S

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Total Russian spring wheat sowings to May 10 slightly behind last year. Total sowings all spring crops nearly 20 per cent behind last year's due to lag in oats, barley and some technical crops. Present rate of sowing is above a year ago, but further increase reported necessary to attain plan. (Agricultural Attaché Steere, Berlin, May 22.)

New German wheat import regulations permit imports to June 15 by millers at the rate of \$1.30 per bushel (20 marks per quintal) on a quantity equal to 20 per cent of imports during April, May and June of last year. Millers are required to deposit with customs office evidence of mill grindings during the specified months of 1930. The regular German duty on foreign wheat is about \$1.62 per bushel. (Cables, Agricultural Attaché Steere, Berlin, May 6-20.)

Estimated corn production Union South Africa this year 57,000,000 bushels compared with 80,350,000 bushels last year. (Agricultural Attaché Taylor, Pretoria, May 20.)

Heavy bloom of apples, pears and cherries reported in most of Continent and prospects appear better than last year. Season fully 3 weeks later, reducing possible frost injury. Plum bloom heavy but set is irregular. Switzerland is anticipating record crop even exceeding that of 1929. German bloom especially good in Rhine and Bergstrasse districts. In Styria district, Austria, the apple bloom was medium and comparable with last year while pear bloom was very good. Nearly all Italy reported heavy bloom but grapes and apricots in Tyrol badly damaged and weather continues unfavorable. Some frost damage in France but blossoming generally good. Holland crop promises to be large, barring bad weather. (Agricultural Attaché Steere, Berlin, May 15 and Fruit Specialist Motz, London, May 18.)

Estimated production shelled almonds in Mediterranean Basin 90 per cent of last year on account of frost damage. Present prospects somewhat below a year ago in Italy and Sicily but better in Spain, French Morocco and Portugal. Prices during April increased substantially in Italy due to frost damage but movement lacked support from consuming countries and prices have declined slightly. Spain is securing foreign business and maintaining increased prices. (Agricultural Commissioner Nielsen, Marseille, May 15.)

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C R O P A N D M A R K E T P R O S P E C T S

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BREAD GRAINSCanada reduces spring wheat acreage

The indicated reduction of about 8 per cent in the Canadian spring wheat acreage as against a year ago is expected to be confined largely to the southern parts of Saskatchewan and Alberta, according to W. F. Callander in charge of the Division of Crop and Livestock Estimates, United States Department of Agriculture. Mr. Callander has just returned from a Canadian trip which included several hundred miles by automobile through the Prairie Provinces. Little change in the Manitoba wheat acreage is expected, he reports, except for a probable increase in Amber durum which has been receiving a 10 per cent premium on the Winnipeg exchange.

Southern Saskatchewan was reported very dry with practically no subsoil and moisture, and soil blowing was bad. Southern Alberta also appeared deficient in moisture but Manitoba and central and northern Saskatchewan were reported as being in much better shape. The acreage decrease is expected to be mostly south of the main line of the Canadian Pacific Railway between Regina and Calgary. One private estimate placed the probable spring reduction at 15 per cent but most trade estimates ranged between 5 and 10 per cent with 7 to 8 per cent as the average. The 1930 spring wheat area was estimated at 24,083,000 acres only slightly below the record acreage of 1929. The 1931 intentions to plant indicate a spring wheat area of 22,152,000 acres, or the smallest since 1927.

Russian grain sowings

The rate of sowing of spring grains in Russia increased considerably during the period from April 25 to May 5, according to a cable on May 13 from Agricultural Attaché Steere at Berlin. The total area sown to spring grains up to May 5 was 60,787,000 acres compared with 92,900,000 acres sown to the same date a year earlier. Sowing to May 5 on individual peasant farms only amounted to 9,884,000 acres compared with 44,231,000 acres sown on collective farms. The total area sown to wheat alone totaled 25,698,000 acres against 30,400,000 last year, and barley and oats 17,791,000 acres against 29,900,000 last year. Wheat sowing has improved but is still unfavorable and behind last year in Ukraine, North Caucasus and Volga regions, although it is better than last year in the more eastern section. The area sown to spring wheat up

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to May 5 in North Caucasus was 4,628,000 acres compared with 5,281,000 last year, Ukraine 4,581,000 against 8,159,000 last year, lower Volga region 4,826,000 compared with 5,856,000 a year ago, and the middle Volga region 3,660,000 compared with 5,234,000 acres a year ago. Barley and oats sowing was reported worse than wheat.

World wheat acreage sown in 1930 for harvest in 1931

The 1930-31 winter wheat acreage sown in 18 countries from which estimates have been received totals 138,418,000 acres. That figure is an increase of 1 per cent over the 1929-30 acreage in the same countries. A current statistical summary of the winter wheat acreage appears below. A detailed table appears on page 750.

Winter wheat acreage for harvest in 1931

Countries	: To May 11	: To May 18
	: <u>1,000 acres</u>	: <u>1,000 acres</u>
15 countries reported	: 136,006	:
Belgium	:	389
Luxemberg	:	25
Czechoslovakia	:	1,978
Yugoslavia	: 5,211	: 5,239
Rumania	: 6,162	: 6,154
18 countries, inc. 3 new, 2 revised :		: 138,418

European growing conditions

Crop conditions in Austria at the end of April were reported better than last year, states Mr. Steere. In Russia, local thunder storms were reported for the North Caucasus region during the week ended May 13 and rains in some parts of Ukraine. On May 1 the condition of winter wheat, spring barley and oats in Czechoslovakia was better than average, while winter rye was a little below average. Favorable May weather is reported in Hungary and winter wheat and spring cereals are making seasonal progress. The winter rye crop, however, appears thin and short.

CROP AND MARKET PROSPECTS, CONT'D

Movement to marketUnited States

United States foreign trade in wheat including wheat flour,
July 1 to May 9, 1929-30 and 1930-31 1/

Item	July 1, 1929	July 1, 1930	Week ended			
	to May 10, 1930	to May 9, 1931	May 10, 1930	Apr. 25, 1931	May 2, 1931	May 9, 1931
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Exports, domestic <u>2/</u> ..	133,322	110,614	1,289	3,293	1,153	1,687
Imports from Canada <u>3/</u> ...	10,089	17,148	---	528	431	283
Net exports	123,233	93,466	1,889	2,765	722	1,404

Compiled from weekly reports published by the Bureau of Foreign and Domestic Commerce. 1/ Preliminary. 2/ Includes flour milled from imported wheat. 3/ Mostly wheat imported for milling in bond and export.

Canada

Canadian receipts, shipments, and stocks of wheat,
August 1 to May 9, 1929-30 and 1930-31

Item	Aug. 1, 1929	Aug. 1, 1930	Week ended		
	to May 10, 1930	to May 9, 1931	May 10, 1930	May 2, 1931	May 9, 1931
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Stocks in store:					
Western Gr. Insp. Div.			133,250	142,416	134,787
Total Canada			170,468	155,894	149,798
Receipts:					
Fort Wm. & Pt. Arthur	91,427	141,777	1,571	2,642	3,123
Vancouver	44,822	64,729	590	1,578	1,502
Shipments:					
Fort Wm. & Pt. Arthur	88,895	134,364	4,912	3,598	7,205
Vancouver	40,475	59,003	1,012	2,168	1,667

Compiled from an official report of the Board of Grain Commissioners of Canada.

CROP AND MARKET PROSPECTS, CONT'D

Australia

Agricultural Commissioner Paxton at Sydney reports that unless the overseas movement of wheat picks up materially in the next eight months there will be a heavy carryover at the end of the current season. In 1928-29 when the wheat crop was 160 million bushels exports to April 1 accounted for 60 per cent of the total exports. Mr. Paxton estimates the 1930-31 crop at 190 million (Government estimate 205) of which 140 million available for export (Government estimate 150). To April 1 this year exports have amounted to only 49 per cent of expected total for the year. In other words, the rate of movement has been considerable under that of 1928-29, another year of heavy export surplus.

Mr. Paxton reports there is considerable optimism regarding prospects for exports to the Orient but points out that, to April 1, only 50 per cent of total shipments had gone to Oriental markets against 60 per cent to same date in 1928-29. It seems fair, however, to expect considerable increase in exports to Orient in the next few months, according to Mr. Paxton.

Foreign market conditionsEurope

Continental European import markets were moderately active during the second week of May, states Mr. Steere. Belgium showed a good demand for Plato and Manitoba wheats. Holland was considerably calmer, however, and business was smaller. On the French markets buying of foreign wheat was quieter and the domestic market was sustained with offers continuing small. The trade expects a further revision of the milling quota with a possibility of it being increased to 35 per cent. Italian markets were firm with considerable buying activity of all descriptions of wheat. Austria was firmer with a good demand for the better grades of Russian wheat. Wheat was firm in Czechoslovakia and rye continued sharply upward due to exhausted stocks. Relaxation of the restriction of rye imports is being planned by the Government. Activity of the German market was practically suspended awaiting the Government decision on how wheat imports will actually be handled under the new provisions. While the matter was not definitely decided there will apparently be a refund payable only to millers. The German Government agencies were reported to have bought 1,575,000 bushels of Russian rye at Rotterdam. Wheat imports for April were 1,678,000 bushels. The spot price of domestic rye at Berlin on May 13 was \$1.18 compared with \$1.21 a week earlier.

CROP AND MARKET PROSPECTS, CONT'D

Tientsin, China

Local importers at Tientsin placed few orders, if any, with American and Canadian flour mills during April, according to a cable on May 14 from Consul General Gauss at Tientsin. One order for approximately 18,000 barrels for June or July shipment was placed with an American mill during the first few days of May. It is not probable that any business of consequence will be done with American or Canadian mills until more definite information is available regarding the 1931 wheat crop. Arrivals of wheat flour as well as clearances through customs during April amounted to the highest monthly figure for the current year. For the first time since 1924 foreign wheat was imported into Tientsin for milling. By mixing Australian wheat with native wheat local mills were able to overcome the shortage of native wheat and to maintain the production of flour. Mr. Gauss reports, local stocks of wheat flour at the end of April were approximately the same as those at the end of January, February and March. Flour prices remained fairly steady during April, being higher at the end of the month in terms of local currency and lower in terms of U. S. currency.

Arrivals of wheat flour at Tientsin during April were: United States 83,000 barrels; Japan 122,000; Shanghai 168,000; Manchuria 1,000; total 374,000 barrels. Clearances of foreign flour through customs, not including clearances of Shanghai flour for April, amounted to 232,500 barrels. In April local mills produced 158,000 barrels of flour. Stocks of foreign and Shanghai flour at Tientsin on April 30 were 433,000 barrels. The average wholesale price of wheat flour, exwarehouse at Tientsin, in terms of United States currency per barrel, at the end of April were: American club straight \$2.79, Canadian \$2.61, Japanese \$2.70, Shanghai mills \$2.79, Tientsin mills \$3.15.

Manchuria

Stocks of wheat and flour at Harbin were about normal on May 12 according to a cable of that date from Harbin sent by Agricultural Commissioner Dawson. Demand for flour has been curtailed by economic conditions and flour mills at Harbin have not been fully occupied. Imports of foreign flour at Dairen from July to March inclusive this year amounted to 638,095 barrels of 196 pounds compared with 1,091,156 barrels last year and Shanghai flour 135,374 barrels this year against 80,952 last year. American flour is competing at a disadvantage with Japanese flour milled from a large proportion of relatively cheap Australian wheat. Mr. Dawson reports, American flour c.i.f. Dairen is quoted at 76 cents per bag of 49 pounds and Japanese at 69 cents per bag.

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Wheat prices:

Wheat prices in the principal world markets declined somewhat during the week ended May 16. In the United States cash prices and May futures remained fairly steady, while new crop futures declined along with cash prices and futures prices in the principal markets of other parts of the world. At Liverpool, July futures declined from a close of 67-5/8 cents on May 9 to 66-1/4 cents on the 16th. Winnipeg and Buenos Aires declined by similar amounts. At Chicago and Kansas City the decline was somewhat greater; July futures at Chicago closing at 60-3/8 cents per bushel on the 16th compared with 63-3/4 cents a week earlier. Cash prices at the principal United States markets showed little change during the week ended May 15; the weighted average price of all classes and grades at six markets remained at 76 cents per bushel.

Up to May 13 prices had tended to strengthen rather than to decline at the principal markets. Indeed, some of the leading future markets reached their high closing prices for the current month on the thirteenth. The declines registered in the latter half of the week. There was relatively little in the way of crop prospects which would account for the decline. Crop prospects for the world as a whole continue only fairly satisfactory. Very favorable prospects for the winter wheat crop of the United States being offset by poor prospects for spring wheat in the United States and Canada. In Europe likewise poor crop prospects in some regions are largely offset by fairly good to good prospects in others. There has, however, been some improvement in the rate at which Russian sowings are progressing. Altogether, price movements appear to have reflected the more immediate supply prospects. For several weeks world shipments have been increasing in response to improved buying interest from European importers. For each of the weeks ending May 9 and May 16 total shipments amounted to nearly 20 million bushels. See table, page 751.

Wheat prospects in north China and Manchuria

Prospects for a successful wheat harvest in north China, excluding Manchuria, are reported very favorable this year by Consul General Gauss in a cable on May 14 from Tientsin. The first shipments of this season's winter wheat crop from that area are expected to arrive at Tientsin around June 20. In Manchuria spring wheat seeding is reported progressing favorably though somewhat behind schedule according to a cable on May 12 from Agricultural Commissioner Dawson who was then at Harbin (North Manchuria). An acreage there materially above that of a year ago is expected due to the more favorable price for wheat than for soy beans which has been the principal crop for years.

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Though wheat is reported grown in all provinces of China, north China and Manchuria account for most of the wheat produced in China and represent the chief winter and summer wheat districts respectively. Some winter wheat is also grown in the Yangtze Delta and the central Yangtze Basin of south China and spring wheat in the highlands of the provinces bordering Mongolia in north China. Owing to a lack of reliable statistical information, estimates as to the total average wheat crop of China vary from 200,000,000 to 600,000,000 bushels or more. Manchuria in 1930, according to estimates of the South Manchuria Railway, had a total wheat area of about 3,400,000 acres of which nearly 3 million acres were in north Manchuria. The 1930 production was estimated at about 50,000,000 bushels, a slight increase over the 1929 crop for Manchuria as a whole but a small decline for south Manchuria.

With wheat being relatively more profitable than soy beans during the past one or two seasons, a considerable shift in acreage from beans to wheat now appears probable, according to Mr. Dawson. Manchuria produces at least half of the world supply of soy beans. There was a large carryover reported from the 1929 crop and the 1930 production was considerably larger than that of 1929. Prices declined sharply, but even at the lower values, the export surplus of beans has not been disposed of. The 1930 soy bean area in Manchuria was estimated by the South Manchuria Railway at a little over 10 million acres (almost 3 times the wheat area) of which about 6 million were in north Manchuria and 4 million in the southern part. The area usually devoted to beans, therefore, appears to afford an ample acreage for spring wheat and also enough to still maintain a large bean production. In addition to the area indicated, Manchuria is reported as still having a considerable area of fertile lands yet available for extensive cultivation without irrigation.

The cold winter and rather short growing season in Manchuria limits wheat growing to spring planted varieties. Sowing usually starts in April and harvesting comes in August. Rainfall regularly amounts to 24 to 27 inches annually most of which comes in the 3 summer months, June, July and August. The monsoon rains in August frequently make harvesting difficult and together with very hot weather and possible rust damage often reduces the quantity and especially the quality of wheat grown. This feature appears to have been a limiting factor to some extent in wheat growing in Manchuria especially since 1922. The 1923 harvest proved disastrous as a result of rust infection and acreage during succeeding years was considerably reduced. The 1923 wheat crop in north

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Manchuria was estimated at only 19 million bushels as compared with 45 million bushels in 1922 and around 75 million bushels during each of the 3 preceding years 1919-1921. Production in the years 1924, 1925 and 1926 also was estimated between 20 and 25 million bushels annually.

For the most part north Manchuria is a section of surplus production and south Manchuria a deficit region. Also the rapid migration in recent years from war and famine stricken provinces in north China to south Manchuria has not only increased domestic requirements for Manchuria as a whole but has tended to concentrate it in the deficit area. Manchuria has unusual rail transportation facilities compared with other Chinese provinces. About half the total railway mileage of China is estimated to be in Manchuria alone. It is possible to move surplus supplies from the northern to the southern region. Considerable imports of foreign wheat and flour, however, have been necessary in recent years. Exports reached their peak in 1920 when nearly 30 million bushels were moved from north Manchuria of which it was estimated that 10 million bushels were absorbed in south Manchuria and the balance into world trade. From 1922, however, Manchuria has been mostly a net importer of wheat and flour. See page 731 for additional details on wheat growing and other agricultural activities in China.

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FEED GRAINS

Corn

The first estimate of the 1930-31 corn crop in India is reported at 97,680,000 bushels, an increase of 18.5 per cent over the 1929-30 harvest. A summary 1930-31 corn production table, including a revision in the previous figure for Bulgaria, and the first estimates of the corn crops in Poland and India, is shown on page 753. Favorable weather for the harvesting and storing of the new corn crop in Argentina continued during the week ended May 11.

Exports of corn from the United States, the Danubian countries, Argentina, and the Union of South Africa from November 1 to the latest dates available total 145,024,000 bushels, an increase of 6,277,000 bushels over the previous week's report and 35.8 per cent over the shipments during the same periods of the preceding year. United States corn exports during the week ended May 9 continued at the low level of the past weeks, while Argentine exports continued heavy. See corn trade table, page 755.

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United States corn prices increased a little during the week ended May 8, No. 2 Yellow and May futures advancing 2 cents to 56 and 57 cents, respectively. Buenos Aires quotations averaged the lowest since the middle of February. The spread between the May futures of United States and Argentine corn was about 27 cents compared with 24 cents the week before and 20 cents during the same week of 1930. See table showing corn prices, page 756.

Barley

In Manitoba, Canada, about 27 per cent of the barley had been seeded by the week ended May 9, according to the Canadian Pacific Railway. In Saskatchewan and Alberta only scattered districts report any barley seeded yet. The condition of winter barley in Austria on May 1 was better than last year, while in Czechoslovakia it was a little below its usual condition at that time. Sowings of spring barley in Russia up to May 5 were considerably behind progress to the same date of last year. The situation appears even less favorable than that of wheat. Barley sowing figures appear on page 718.

The total 1931 sowings of barley in the 14 countries so far reported show an increase of 0.6 per cent over those of 1930. The European countries alone show a decrease of 0.6 per cent, while the north African countries have seeded nearly 8 per cent less. See barley acreage table, page 752. A table giving the 1930-31 barley production summary, including the final figure for Belgium and the first estimate for India, is shown on page 753.

Exports of barley from the United States, Canada, Argentina, and the Danubian countries from July 1 to the latest dates available total 85,139,000 bushels, a decrease of 8.6 per cent from the shipments during the same periods of the preceding year. There were no exports of barley from the United States during the week ended May 9, while prices remained at about the same level. See tables showing barley trade and prices, pages 755 and 756.

Stocks of barley at the various elevators in Canada on May 8 amounted to 21,085,000 bushels compared with 23,480,000 bushels on that date last year. Farm stocks of both winter and spring barley in Germany on April 15 were materially below those on the same date last year. Stocks available for sale also show a marked decline. See table of German grain stocks on page 756.

CROP AND MARKET PROSPECTS, CONT'D

Oats

In Manitoba, Canada, about 35 per cent of the oats acreage had been seeded by the week ended May 9, according to the Canadian Pacific Railway. In Saskatchewan the oats sowing was fairly general, with about 20 per cent completed in the Province as a whole. In Alberta the sowing of oats was also under way. The condition of oats in Czechoslovakia on May 1 was slightly below its average condition at that time.

The 1931 area sown to oats in the 8 countries so far reported totals 70,307,000 acres, an increase of nearly 15 per cent over that of last year. The European countries, however, show a slight decline of 0.2 per cent, while the 2 North African countries reported are more than 12 per cent below a year ago. See oats acreage table, page 752. A summary table of the 1930-31 oats production, including revisions in the previous estimates for Belgium and Chile, is shown on page 754.

Exports of oats from the United States, Canada, Argentina and the Danubian countries from July 1 to the latest dates available total 45,431,000 bushels, an increase of 1,628,000 bushels over the previous week's report and 59.2 per cent over the shipments during the same periods of the preceding year. United States exports during the week ended May 9 continued negligible, while prices advanced slightly. See tables showing oats trade and prices, pages 755 and 756.

Stocks of oats in store in the various Canadian elevators on May 8 amounted to 12,704,000 bushels compared with 12,343,000 bushels on the same date last year. Farm stocks of oats in Germany on April 15 were around 29 per cent under those of a year ago and oat stocks available for sale about 62 per cent less. See table page 756.

COTTON

Russian cotton sowing ahead of last year

Sowings of Russian cotton to May 1 this year totaled 919,000 acres as against 549,000 acres on that date last year, according to a cable on May 11 from Agricultural Attaché Steere at Berlin. The 1931 cotton plan for Russia calls for around 5,683,000 acres. Actual sowings in 1930 were estimated at 3,840,000 acres. A good growth is reported for the early plantings this year. Acreage and production statistics for Russian Asiatic cotton since 1926 are given on page 757.

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Brazilian cotton makes new low at Liverpool

Continued weakness with slow demand characterized the Liverpool market during the second week of its month and spot prices on May 18 reached new lows for Brazilian Fair Ceara and Sao Paulo. The previous low was recorded last December. American low middling also dropped to the low point reached at the end of 1930. Supplies consisted mostly of medium grades. Low native purchasing power of India together with the continued boycott checked the cloth trade with that important outlet for British goods. See table, page 757.

Continental cotton markets weak

The decline of raw cotton prices has dampened trade sentiment on all continental European markets, according to Mr. Steere. Only intermittent buying and price fixing is reported by spinners. Customers appear cautious apparently guided more by the bearish stock market movements than by crop factors. Mill activity was reported largely unchanged. In Germany spinners' and weavers' sales show a slight seasonal improvement but the improvement is less than expected, Mr. Steere reports. The spinners' cartel has been prolonged for 6 weeks with a stronger organization planned. Raw cotton buying at Bremen was moderate and occasional important price fixing was reported.

In Czechoslovakia and Austria the situation appears unsatisfactory. In Italy the depression continues and yarn and cloth stocks are still above last year, while new sales and unfilled orders remain below those of a year ago. The Polish spinners' cartel was reorganized in April and now includes 89 per cent of all spindles. It is expected that the remainder may be forced into the cartel by the Government. The textile center of northern France reported few orders. Labor difficulties continue to affect French market activity.

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SUGARRumania to reduce sugar beet acreage

Reports indicate intentions of Rumanian sugar beet growers to reduce materially the 1931 acreage, according to Assistant Agricultural Commissioner Gibbs at Belgrade, Yugoslavia. Russian competition in export markets is cited as a leading cause of the reported intentions.

CROP AND MARKET PROSPECTS, CONT'D

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Growers and sugar manufacturers in Rumania have agreed on a beet area of 39,042 acres. Figures are not available for the 1930 acreage, but in 1929 it was 121,820 acres, against 208,800 acres in 1928 and 208,800 acres in 1927. Only 5 sugar factories will be in operation during the 1931 season. Normally there are 12 factories at work. Where growers are found to be too far from factories as a result of reduced operations, the Government will pay any extra freight charges necessary to keep shipping costs to growers down to the level prevailing before the 7 factories were closed.

Correction

In the second paragraph on page 681 of "Foreign Crops and Markets" for May 18, under the title THE WORLD SUGAR SITUATION, the following statement was made:

"In cane sugar, the 1930-31 world crop is estimated to be about 1,033,000 short tons larger than the former record crop produced in 1928-29. Restricted 1930-31 production in Cuba was more than offset by larger crops in Java and India".

The above statement should be made to read as follows:

"In cane sugar, the 1930-31 world crop is estimated to be about 1,345,000 short tons less than the record crop produced in 1929-30. Restricted 1930-31 production in Cuba was partially offset by larger crops in Java and India".

The statement as corrected above is borne out by the details covering world sugar production on page 686 of the same issue.

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FRUIT, VEGETABLES AND NUTS

Russian fruit exports decline in 1930

During 1930 exports of Russian fruit amounted to 7,150 tons, a decline of 8,960 tons as compared to 1929 when 16,110 tons were exported, according to information published in the British Empire Marketing Board's "Fruit Notes". Exports during 1930, although smaller than in 1929, were somewhat greater than during the two crop years (October-September) 1926-1927 and 1927-28. Exports of fresh fruit consists mainly of apples, grapes and pears with apples by far the most important, accounting for almost 90 per cent of the total. Converted to boxes the apple exports in 1929 amounted to around 790,000 boxes and in 1930 to 360,000 boxes.

CROP AND MARKET PROSPECTS, CONT'D

Germany is the most important market for Russian fruit taking on an average in 1929 and 1930 about 61 per cent of the total direct exports. The remainder of the exports were distributed as follows: Denmark 10 per cent, Sweden 9 per cent, United Kingdom 6 per cent, Finland 5 per cent and all others 9 per cent. It should be noted, however, that the British market gets a larger percentage of Russian fruit exports than is indicated by these figures because of reexports from other European countries. Russian apples are carefully graded and well packed. Both boxes and barrels are used as containers. See table on Russian fruit exports, page 754.

United Kingdom imports of American prunes

The United Kingdom ranks second only to Germany as an importer of prunes. During the last ten years British markets have taken between 37,000,000 pounds to 50,000,000 pounds annually, imports for the decade averaging 43,000,000 pounds. The average for 1926-1930 was practically the same as for the five preceding years but nearly double the pre-war average. Between 1,000,000 pounds and 3,000,000 pounds are afterward re-exported. The United States is the principal source of these imports, in recent years supplying approximately 88 per cent of the total. Though total imports during the last ten years have been maintained at about the same level, the demand for United States prunes has materially advanced, average imports from the United States amounting to 38,624,000 pounds during 1926-1930, or an increase of 15 per cent over the 1921-1925 average. Imports from the United States reached the peak in 1927-28, but during the next three years fell off substantially. Details on this trade will appear in a later issue of "Foreign Crops and Markets".

DAIRY PRODUCTS

Slight improvement in European butter markets

Butter quotations in important European markets were fully maintained during the week ended May 14, and on some descriptions, notably on Colonial butters in London, material advances were reported. New Zealand advanced from the equivalent of 22.7 cents to 23.7 cents and Australian from 22.3 to 23.0. The Copenhagen official quotation was unchanged at the equivalent of 23.1 cents a pound against an advance of 1 cent on 92 score in New York to 24.5 cents. See last page for detailed comparative price statement as cabled by American Agricultural Commissioners.

CROPPING SYSTEMS AND REGIONAL AGRICULTURE IN CHINA a/

Introduction and summary

The cropping systems practiced in China have been evolved from centuries of experience and seem to have been passed on from generation to generation into the present with little apparent change. The existing cropping systems are especially fitted to the local conditions, and scientific tests would probably in most instances confirm their efficiency. Each region in China has selected the crops which permit it to utilize to the best advantage the prevailing climatic, topographical, and soil conditions. In some regions systems of agriculture have been devised whereby the farmers grow two and three crops on the same piece of land year after year. Attention in this report will be devoted mainly to the factors that have determined the distribution of such crops as soybeans, kaoliang, millets, wheat, and rice. The forces that determine the production of such products as cotton, tobacco, sugar cane, citrus fruits, wool, etc., must await further investigation and research.

The very cold winters in Manchuria eliminate the possibility of two crops a year and confine agriculture mainly to spring planted crops of beans, kaoliang, millets, wheat and corn. On the Great Plain of North China, however, winter wheat, barley, peas, broad beans and rape seed are planted in the fall; kaoliang, millet, and cotton in the spring; and beans, millet, corn, sweet potatoes, peanuts and sesamum in the summer. The extent of fall sowing on the Great Plain leaves about one-fifth to one-third of the land available for spring planted crops. Following the wheat harvest in late May or early June, the land is immediately replanted to the summer crops and frequently the summer crops are planted between the rows of maturing crops that are to be harvested several weeks later.

The Yangtze Kiang Basin, extending from the Pacific Ocean to the far interior of China, lies immediately south of the Great Plain. This entire district is cut up by mountain ranges, but farming is very important on the flat alluvial lands in innumerable valleys. This basin marks the beginning of the rice growing district of South China. For a considerable distance north of the river, rainfall is somewhat scant for rice culture so that rice growing is confined mainly to valleys and low lying terraces where irrigation can be utilized. South of the river, however, the rainfall increases sharply, enabling more and more rice to be planted and finally permitting two crops of rice to be grown, thus eliminating winter cropping entirely. In the entire belt of the Yangtze Basin, winter cropping, similar

a/ Based on a report prepared by Mr. Paul O. Nyhus, American Agricultural Commissioner in Shanghai for the purpose of establishing a better understanding of agriculture in China. In order to obtain basic data for the study, a questionnaire was sent to various mission stations throughout the Republic. Use was likewise made of material gathered by the University of Nanking in its farm management surveys, and of statistics compiled by the National Bureau of Statistics. This material is supplemented by information gathered by Mr. Nyhus through personal investigation and observation.

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to that described for the Great Plain, is practiced. In general the crops consist of as much rice as rainfall and irrigation facilities will permit and of such other crops as corn, beans, wheat, rape seed, barley, kaoliang, millet, peanuts and cotton. The southern boundary of the Yantze-Kiang Basin marks the beginning of the characteristic rice country of southeast China.

The relatively high temperature, abundant rainfall, and fertile soil of southeastern China make this the characteristic rice growing district of the Republic. Here not only early and late crops of rice are grown on the same land each year, but in some districts two rice crops are grown on the same land simultaneously, the second crop being set out from ten days to a month after the first one has been planted. From a cropping standpoint, entire southeastern China is a rice growing country; although substantial amounts of winter wheat, rape seed, beans, sugar cane, vegetables, peanuts, tobacco and other crops are also grown. Wherever the slopes are not too steep and where soil conditions warrant the farmers have terraced far up the hills and sides of mountains.

General considerations

Data furnished by one hundred and ninety mission stations throughout the Republic of China constitute the fundamental material upon which the description of the various cropping systems in China in this report is based. No attempt has been made to determine the per cent of farm land actually devoted to each crop in any given province. The essential character of a cropping system is probably as accurately represented by a locality several miles in diameter as by a locality many times that size. At any rate the missionaries have drawn from many years of experience and observation in their respective districts and taken as a whole their comments probably represent the most comprehensive data on cropping systems for all of China that has yet been assembled for foreign interpretation.

Most of the boundaries between the various cropping regions referred to in this report must be approximations. In some cases, however, they are very definitely determined and located by the presence of high mountain ranges which sharply alter the rainfall and agricultural conditions, but more frequently they represent zones where one system gradually changes into another. The occurrence of various crops and the variations in the crops grown in the different localities depend on a large number of factors, many of which still await investigation and description. In general, however, certain factors stand out as of prime importance in explaining the cropping systems in various parts of the Republic. Among these are the Asiatic Monsoon, topography, and soils, the effect of inadequate transportation facilities, and the effect of the absence of a large livestock industry on land utilization.

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Climate influenced by the Asiatic Monsoon

The Asiatic Monsoon, or the periodical change in the winds, is the most important single factor influencing the climate and agricultural production in all of the latitudes of China. From October to the end of March the monsoon blows from the arid, desert regions of the interior of Asia towards a region of low pressure in the Pacific Ocean causing very scant rainfall or snow. With the heating of the earth's surface in the interior of Asia during the spring, however, the region of low pressure shifts from the Pacific Ocean to the interior of the continent. At this time the winds blow in from the warm Pacific, bringing heavy rains to south China from March to June and to north China from June to August. The shift back to the cold winds from central Asia occurs again in September or October. The monsoon, together with the mountainous topography of the country, combine to bring about wide differences in annual rainfall and average monthly temperatures in the various agricultural regions.

Topography and soils

The topography of China is the second most important factor affecting the types of agriculture practiced in various parts of the country. For the most part, China is a mountainous country, but there are many large plains at both high and low altitudes in north and south China where agriculture is being or can be conducted on an extensive scale. In many regions the mountain ranges confine agriculture to delta lands at the mouths of rivers and to relatively narrow river valleys. The mountains also greatly alter the effect of the monsoon in different parts of the Republic in respect to rainfall, temperatures, and the occurrence of cyclonic storms.

In the absence of soil surveys the influence which soils exert on cropping systems in China cannot be definitely indicated. The crops themselves may suggest to some extent the soil qualities in different parts of the Republic. In general, the soils of north China, exclusive of Manchuria, are very low in humus or organic matter. As a factor in this situation, the long dry season from October to May prevents, over a long period of the year, root development and bacterial processes which might help to maintain the organic content of the soil. Particularly evident in North China is the wide extent to which every vestige of crop residue, roots, straw, and weeds, is removed from the fields to be used for fuel during the extremely cold winters, leaving absolutely nothing to be plowed under as a source of humus or organic matter. This part of the country is almost completely deforested. The forestation of hills and mountains would certainly relieve the fuel problem besides providing for the more immediate objects of preventing erosion and the filling up of stream channels, which so frequently result in flooding farm lands and impending navigation. Of the foremost

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importance in maintaining soil fertility in central and south China is the general practice of using human feces and urine, commonly termed night soil, which is carefully collected in all of the densely populated districts of this region.

Effect of inadequate transportation facilities on agriculture

Facilities for any large interchange of bulky commodities between distant points are very inadequate in China. The various centers of population, therefore, must rely largely upon local production for their food supply. The two-wheel cart of north China pulled by horses, mules or donkeys, enables longer hauls than in central and south China, where cart roads are very scarce. The overland movement of traffic in large volume is very limited in north China. The chief method of transportation in central and south China are coolies carrying loads on poles over their shoulders or pack animals. Canal and river transportation extends the areas of distribution in central and south China, but in general the movement of cargo in large quantities to and from interior points is even more limited than in north China.

The result has been an adjustment of food habits in each region to the crop possibilities of the region. So established have these food habits become during the course of centuries, that cause and effect have become confused and the present generation of farmers explain their cropping systems by the requirements of the acquired diet of the surrounding community. Because of these conditions, agricultural development has been much less influenced by the demands of distant markets than in the western countries. There is, of course, a certain amount of long distance interchange of commodities as indicated by river, interport, and overland domestic trade and a corresponding degree of specialization on certain crops, but in relation to the aggregate agricultural production in China the influence of far distant markets has not been large.

Effect of the absence of a livestock industry on land utilization

The absence of a large livestock industry must be understood in interpreting the utilization of crop land in China. The Chinese farmer raises his crops for direct human consumption. The by-products of crops, such as straw and stalks, are used for fuel, as fodder for draft animals, and for building and other industrial purposes. Dairying and beef cattle industries are practically non-existent. Cattle are used primarily for work animals and only secondarily as a source of beef supply. Water buffalo, donkeys, horses, mules, and cattle used for various field work graze in waste places or along canals and are fed various roughages from the cereal crops or dried grasses cut on the mountain sides. The hog

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industry comes nearest to being a farm livestock enterprise, with numbers noticeably large in Szechuan Province where considerable corn is probably fed. Poultry is found everywhere in China, but the numbers per farm are small, eight being a large number. Sheep and goats pick their own living on waste or untilled lands. Meat, mostly pork, is a luxury item for the masses and further indicates a relatively small per capita production of livestock. Under these circumstances, with the exception of small percentages of alfalfa in Shensi Province, strictly hay crops or pastures do not appear.

Agricultural regions

From an agricultural point of view the Republic of China may be divided into the three general regions of Manchuria, north China, and south China. Within these three broad and general divisions, however, many other subdivisions must be made because of the manner in which such factors as the Asiatic Monsoon, topography, soil, transportation facilities, and other factors affect the distribution of types of agriculture.

Manchuria has been so separated from China proper politically, socially, and geographically that it is treated in this report as a separate agricultural region. The Manchurian lowlands, running from north to south and bounded by the Great Khinghan mountains on the west, the Little Khinghan mountains on the north, and the Manchurian Highlands on the east, constitute one of the great potential agricultural regions of the world for large scale farming along scientific lines. China proper, to the south, really consists of two Chinas. One is the dry, brown, treeless land of precarious agriculture and frequent famines in the north. The other is the wet, green land of rice and crowded cities in the south. So distinct are these differences that they divide the country into the two great geographical units of north China and south China. The boundary between them cannot be definitely indicated as there is a certain overlapping of conditions. On a cropping basis, however, the boundary may be taken to be a line separating a region to the north characterized by light and very seasonal rainfall, short growing seasons, and summer crops of beans, millet, kaoliang, corn and land lying fallow, from a region immediately to the south where there is quite an abundant rainfall which together with irrigation, makes paddy rice the leading summer crop. North China is further subdivided according to cropping systems into the Great Plain and the loess hills and mountains to the west, while south China is subdivided into the Yangtze Delta, the Yangtze Basin, west central China and southeast China.

Manchuria

The new China of Manchuria has been so separated from old China politically, socially, and geographically that it has experienced a strangely independent and characteristic development of its own. Many

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elements have entered into this special development, but a fundamental factor has been the isolation from China proper. The Manchus preserved this area as their own native region, and excluded their subject people, the Chinese, until 1905 when the prohibition was lifted. Construction by the Russians of the Manchurian link of the Trans-Siberian Railway and its southern branch from Harbin to Port Arthur in 1900 opened up the vast region of north Manchuria and began a colonization movement and land development which more recent railway construction and political events have accelerated.

In geographical extent this area comprises approximately 400,000 square miles and extends from a latitude of 39 degrees to 53 degrees. Agriculturally the Khingan Mountains and the cold, dry Mongolian steppes form the natural western boundary of this region. Between the Great Khingan Mountains on the west, the Little Khingan Mountains in the north, and lower mountain ranges on the east, are located the extensive plains of the Sungari and Liao river systems, known as the Manchurian Plains or lowlands. The Sungari Plain includes the north Manchurian district of the Sungari River and slopes to the region of the Amur River. The Liao Plain comprises the south Manchurian districts of the Liao River and extends towards the Gulf of Chihli. There are estimates of 20,000,000 acres under cultivation in north Manchuria and 17,000,000 acres in south Manchuria, or a total of 37,000,000 acres. Some Russian and Japanese investigators place the arable land in Manchuria at 80,000,000 to 100,000,000 acres and although these estimates may be excessive, there are unquestionably millions of acres of potential crop land in north Manchuria awaiting colonization and development.

Manchuria, more than any other part of China, contains important agricultural areas favorably situated climatically and still available for colonization. Railroad facilities also are better than in most parts of the Republic. In most of China, it is a problem to raise enough food for an overpopulated, isolated region, but in Manchuria there is a considerable surplus of farm production over the requirements of what, according to Chinese standards, might be called a sparse population. Heavy immigration has been under way from China proper into Manchuria since 1905. Civil wars and heavy taxation in China proper have stimulated that movement in recent years, and available land in south Manchuria has been pretty well taken up. The movement continues into north Manchuria, however, with the best lands probably found largely in the eastern and northern districts. The western frontier of cultivation, however, is moving further into the Asiatic interior despite the less favorable climatic conditions encountered.

There are a number of large-scale farms in Manchuria embracing 2,000 to 4,000 acres, owned by Chinese officials or banks and operated with imported power machinery and Chinese labor. Horse power is employed to a greater extent than in north China, but very simple equipment and hand

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labor are still predominant. Settlers are allotted about 10 acres per man. In north Manchuria few farms exceed 50 acres. Japanese sources report that two-thirds of the north Manchurian farms range from 2-1/2 to 12 acres. These small Manchurian farms are subject to winter temperatures similar to those of northern Manitoba, while summer temperatures as high as 103.5 degrees have been recorded. To the east and south the region is open to the moist, warm winds of the Pacific. There appears to be somewhat more rainfall on the eastern side than in the central areas. Further west, rainfall becomes less and less favorable, finally merging with the dry, cold climatic conditions of the Mongolian plateau. Within the most developed agricultural districts, however, the rainfall is quite uniformly 23 to 27 inches. Approximately 60 per cent of the rainfall in Manchuria occurs in June, July and August, the height of the growing season.

The very cold winters in Manchuria preclude the possibility of two crops per year and confine agriculture to spring planted crops. In general, however, Manchuria is very productive. A rainfall more favorably distributed than in any other part of northern China is an important factor governing production. From a cropping standpoint the entire Manchurian region is remarkably uniform. There is considerable spring wheat grown in the north and corn in the south, but soybeans, millet, and kaoliang comprise the "big three" of all Manchuria. Variations in soil would suggest a wider variety of crops, but apparently climatic conditions have proven the crops named to be the most profitable. Soybeans especially are favored. There is practically no snow in winter, and the early spring weather is dry and dusty. Several inches of rain in May and more in June keep the beans growing until the arrival of heavy rains and heat in July and August. About half of the annual rainfall occurs in the two latter months. Late September and October are normally dry and bright, facilitating maturity and harvest. The dry spring and very wet summer are the chief factors limiting wheat production in Manchuria.

For most of Manchuria, 20 to 40 per cent of the farm land is planted to soybeans, the larger percentages being found in the northern districts. Production exceeds 165,000,000 bushels annually. Soybeans are the big cash crop and provide more than half of the total freight handled on Manchurian railways. Two-thirds to three-fourths of the crop is exported. The equivalent of 1,727,000 tons of beans, bean oil, and bean cake were exported in 1915, increasing to about 4,000,000 tons in recent years. In the north, kaoliang occupies only 15 per cent of the crop land, but through central Manchuria it occupies fully 25 per cent. In the south and southwest it is the leading crop, absorbing 30 to 60 per cent of the crop land.

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The leading cereals in that Manchurian diet are millet and kaoliang. After the requirements of some 30,000,000 people are met, however, usually there is a surplus for export to Choson and north China ports. Spring wheat is the second most extensively grown crop in certain localities of north Manchuria. In south Manchuria, however, wheat production is unimportant. Usually south Manchuria imports through Dairen wheat flour from Shanghai, Japan, Canada, and the United States. Corn occupied 50 per cent of the land in southeastern Manchuria in 1930. In the extreme north, agriculture is confined to cereals requiring only a short growing season. For Manchuria as a whole, crops of some importance other than those mentioned are scattered amounts of buckwheat, sesame and hemp. To the southeast, there is upland and paddy rice. In the north there are considerable quantities of barley, rye and oats. As far as possible, the rotation consists of beans followed by kaoliang, or corn, and in turn by millets, or wheat.

North China

North China, exclusive of Manchuria, includes the Provinces of Chihli, Shansi, Shensi, Kansu, Honan, and Shantung. Within this area lie the Great Plain to the east and the loess hills and mountains to the west. The Great Plain is a very important farming area and sustains a large population. The dryer, mountainous country of loess hills is much less extensively used and populated. Entire north China experiences extremes of winter and summer temperatures. The main crops are beans, millet, kaoliang, corn, cotton, winter wheat, barley, peas, sweet potatoes, peanuts, sesame and tobacco. The scanty rainfall, its seasonal character and unreliability, both as to time of occurrence and amount, and the problem of flood control on the plains are some of the difficulties with which the farmers in north China have contended for centuries with remarkable ability. Long droughts or severe floods, however, often have brought crop failures, hardship and famine.

The Great Plain of north China is the largest agricultural plain in the Republic. It is 450 miles long, 400 miles wide on the southern boundary and 100 miles wide in the north. The region comprises more than 110,000 square miles, or the combined area of Iowa and Illinois, with a population of around 80,000,000. For the most part it is an alluvial plain formed by extensive river systems. It includes most of the provinces of Chihli and Honan, northern Anhwei and Kiangsu, and the level parts of the Shantung promontory; also a mountainous district comprising one-third of Shantung, but which is agriculturally similar to the Plain. On the north, west, and southwest, the boundary is clearly marked by the encircling mountains. In the southeast the plain formation extends to the Yangtze river, where the dominant agriculture changes to rice. In this report, however, the area of the plain dealt with is the major part, where upland crops, as distinguished from paddy rice, are grown.

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The Great Plain is remarkably level. After heavy rains, large tracts are covered by standing water, which often ruins crops and is a common cause of famine. The annual rainfall ranges from 20 to 27 inches, most of it coming during July and August. The normal condition from October to April is drought and dust storms. In certain districts, however, there are many hand-operated wells, which insure good yields on the flats thus watered. In the northern districts the periodicity of the rains is strongly marked, the three months, June-August, having more than 70 per cent of the annual fall. In the south the periodicity is less marked, December being the only month with a mean rainfall of less than one inch. Failure to receive the none-too-adequate rains in April and May seriously cuts the wheat yield on the Plain. On the other hand, a 2-or-3-inch fall in May insures a heavy yield. Droughts extending into June and July are not uncommon in the northern sections, but more frequently there is damage from excessive rains in July and August. Flood control is an important problem, but drought has caused the worst famines on the Plain.

The Plain is "Old China" in all senses as to customs and tradition, both social and agricultural. Centuries of cropping practice on the small holdings have given rise to the expression "three harvests in two years". One-half to three-fourths of the land usually is sown to winter wheat in October, the amount diminishing toward the north. To the south there are additional areas of barley and peas. Broad beans are sown along the coast. When fall sowing is completed, there remains about one-fifth to one-third of the land available for crops planted in April. Kaoliang, a grain sorghum, is the leading spring-planted crop, using about 15 per cent of the total farm land. Spring-planted millet accounts for another 10 to 20 per cent in the north, but far less than 10 per cent in the south. Small percentages of cotton are general, but in some northern districts that crop occupies more than 20 per cent. Much of this cotton, however, is unfit for spinning, but substantial amounts are exported to the United States and Japan for other purposes.

Following the harvest of winter wheat in late May or early June, the land is immediately replanted to summer crops. Frequently inter-planting is practiced before the wheat harvest. In the north, corn is the leading summer crop, with millet also important. The corn is usually interplanted with mung or soybeans maturing after the corn harvest in early September. The bulk of the bean crops in the north apparently are so grown, rather than alone. South of the Yellow river, soybeans constitute the leading summer crop, occupying roughly half of the land. Yellow beans predominate south of the Yellow river, black being more popular in the north. Sweet potatoes are the next most general crop on the Great Plain. Substantial amounts of peanuts and sesame complete the essential crops. Sesame seed is a regular export commodity. Sesame oil is used commonly in China as a cooking oil. Tobacco is important in certain localities. In Shantung Province there is a district where production of flue-cured tobacco from American seed has reached an annual output of about 40,000,000 pounds. There are other tobacco districts in Anhwei and Honan.

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The mountain ranges on the western border of the Great Plain in north China mark the beginning of an extensive loess hill and mountainous country, extending westward to the mountains of Tibet, south to the Tsing Ling mountains and north to the Mongolian deserts. The region outlined embraces western areas in Honan, Shansi, Shensi and Kansu Provinces. The characteristic soils are the deposits of loess, or wind blown silt, in many places hundreds of feet deep. Through the ages these deposits have undergone a process of vertical cleavage, resulting in a region of natural terraces and most irregular land levels. The rivers have cut deep gorges through the loess and, excepting on the broad plains, the country appears as a series of vertical walls of yellow soil on which are irregular plots or fields which in turn are broken by sheer rises to higher levels. The succession of rising walls of yellow earth intensify the impression of barrenness prevalent in August and September, when at least half of the farm land in some localities is left fallow for winter wheat. The loess soil, however, is very fertile where water conditions are favorable. In addition, it combines the advantages of a soil easily tilled with one that is porous and fine grained enough to absorb and retain large amounts of water.

From the viewpoint of cropping systems, the loess region may be divided into three areas: The northern Shansi and Shensi district; the Kansu highlands; and the winter wheat and summer fallow areas. In the loess and mountainous areas of northern Shansi and Shensi, the low winter temperatures confine the cropping system to summer crops of millet, kaoliang, beans, oats, spring wheat and potatoes. The rainy season as a rule does not begin until July and frequently is insufficient. Early frosts are common. The annual rainfall ranges from 10 to 16 inches but drought conditions prevail into May and June. Short-season crops, therefore, are essential. Delayed spring rains reduce the kaoliang acreage and increase the millet acreage, which is commonly the leading crop; very late rains encourage the planting of short-season beans and buckwheat.

Available reports indicate that in this district fully 60 per cent of the total farm land is early planted. Forty to fifty per cent seems to be in Italian millet and 10 to 20 per cent in broom corn millet. Kaoliang varies from only a small percentage to 30 per cent where moisture conditions are better. Black soybeans usually account for 10 per cent. Oats may occupy as much as 25 per cent of the land, depending on the altitude. Spring wheat, sown early, appears in some localities, as do white potatoes. Peas have an important place in northwestern Shansi and northern Shensi. There is some cultivation of poppies for opium, but the total acreage so used is probably of minor importance. In parts of Shansi there is a certain amount of irrigation practiced. In such areas there are reports of 25 per cent of the land going under winter wheat in addition to the usual spring-sown program. On the most favorable lands, however, such as the important Taiyuan Plain, millet leads. South of the

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Taiyuan Plain some of the valleys and mountain sides are devoted exclusively to millet. The southern boundary of this millet region marks the beginning of a district where winter cropping, including wheat, is a major practice. There the season is longer and there is some summer following.

Conditions in the Kansu highlands, the second cropping division of the loess region, are similar to those described for northern Shansi and Shensi. Higher altitudes and lower temperatures, however, have modified the system of summer crops. In this country of high mountains and deep gorges, the few plains and agricultural valleys are found at altitudes of 3,500 to 7,000 feet. Native carts provide the only means of transport and communication, and the region is probably as inaccessible and isolated as any in China. Millet and barley are the leading food crops, the latter especially in the western areas, approaching Tibet. In most localities, millet occupies about half of the land. Wheat and peas together occupy from 20 to 30 per cent more. These earlier crops, however, are less dependable than one of the later millets. Some flax also is grown, and poppies are of some importance. Buckwheat seems to have a more important place in the Kansu cropping system than in most other regions of northwest China. Some tobacco also is grown in the restricted irrigated areas, but there is considerable damage from summer hail storms. Frosts are known to come early enough to injure buckwheat.

The third loess area, the winter wheat and summer fallow region, embraces southern Shansi, southern Shensi, southeastern Kansu, and western Honan Provinces. This area includes the Wei Basin in Shensi and Kansu, the center of the recent two-year famine. In latitude the area is similar to the Great Plain, but the loess mountains have so modified rainfall conditions that large portions of it receive an annual average rainfall of only about 18 inches, which is 4 to 9 inches below that recorded on the Plain. A high degree of uncertainty, however, is evident in the time and amount of rainfall in this winter wheat region, with a very small margin of safety for the crop inherent in the September and spring rains. Crops other than winter wheat are grown if the rains come soon following the wheat harvest early in June. Otherwise the land lies fallow. Winter cropping occupies 75 to 90 per cent of the farm land. Barley and peas run 5 to 10 per cent each in Shensi and eastern Kansu. Rape seed occupies as much as 10 per cent on the Wei Plain and there is a small per cent of alfalfa.

The Wei Plain has an especially heavy winter cropping program. About the only land left unoccupied each winter is about 10 per cent left for planting cotton in April. Southern Shansi and western Honan constitute one of the best cotton districts in China, but poor transport hampers the movement to cotton mills on the coast. Some of the cotton, called Lingpao cotton, competes with American middling, 7/8 inch cotton in Shanghai. The cotton acreage varies widely according to the rainfall at planting time. The general dry

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conditions in this winter wheat area are illustrated further by the small areas planted to kaoliang, except where irrigation is available. As much as 30 per cent of the cotton also is grown under irrigation. Early millet is planted in some localities. Normally, however, at least half of the land lies fallow in summer. Beans, mostly mung rather than soybeans, may take up as much as 10 per cent of the crop land in the summer season, again depending on the rainfall. Summer buckwheat also is important in southeastern Kansu.

South China

South China may be divided into two large regions, the first beginning at the mouth of the Yangtze River and extending westward, north and south of the river to the far interior of Szechwan and Yunnan; and the second including all of southeast China. The boundary between north and south China consists of the Tsin Ling mountains in the west and a line following the Hwai River to the Pacific in the east. This boundary coincides with the approximate northern limit of rice growing. Rainfall is somewhat scant for rice growing along this northern boundary and as a result, the rice fields there are limited to the valleys and low lying terraces where they can be irrigated with water collected and stored in ponds.

The great Yangtze valley itself may be further divided into three east and west subdivisions based largely on topography and irrigation facilities and the extent to which rice and other summer crops are grown. These subdivisions are the Yangtze Delta, the central Yangtze Basin, and west central China. In spite of the geographical extent of the Yangtze Valley and wide difference in climate, topography and soils, the cropping systems of the entire region have certain basic similarities. Winter cropping is very general. The summer crops consist of as much rice as irrigation or water facilities will permit and of corn, cotton and beans in varying amounts in the different districts. The lines of equal rainfall in the Yangtze Valley run east and west but proceeding southward the rainfall increases sharply, enabling more and more rice to be cultivated and finally favoring two crops of rice and the entire elimination of winter cropping. The southern boundary of the Yangtze Valley region, therefore, is the approximate southern limit of relatively important winter cropping. This is by no means a clearly defined boundary, since substantial acreages of the various winter crops of rye seed, beans, and wheat occur on mountain sides or in valleys farther south. In general, however, a line running east and west across central Chekiang and northern Kiangsi and southward across western Hunan indicates the change to the quite exclusive rice country of southeast China.

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The Yangtze Delta is one of the most densely populated areas in the world. It embraces the Province of Kiangsu, eastern Anhwei, and northern Chekiang. Facilities for almost complete irrigation in the delta give agriculture a character considerably different from that of the rest of the Yangtze basin. Waterways are numerous and offer the prevailing mode of transport. The country is generally flat, but well wooded, especially around the numerous villages. The soil is rich and carefully fertilized in small fields which are worked by a large amount of hand labor, although water buffalo do most of the plowing. Practically no farm land is idle in either winter or summer. The climate is temperate or subtropical, with abundant rainfall. Districts in Kiangsu and Chekiang comprise one of the leading silk producing areas of China. Mulberry trees occupy a considerable area. The most important fall planted crops in the delta are wheat, barley, broad beans, and rape seed. The most important spring and summer planted crops are rice, beans, and cotton. Of the fall group, winter wheat is the most important. The transplanting of rice follows the harvest in May or early June of the winter grown crops. Cotton is frequently sown broadcast and hoed in before the wheat is harvested.

Rice and cotton harvests in the delta occur in October and by November the country is again green with stands of wheat and barley. Other crops are sweet potatoes, taro, water chestnuts, corn, and peanuts. Night soil is of foremost importance in maintaining fertility in this and other intensely productive regions of central and south China. In canal districts the fertile sediment in the canals is frequently removed and spread over the adjoining fields. Farm yard refuse, rice chaff, and all other forms of waste vegetable materials are carefully composted. In many fields a variety of clover is seeded in the fall, and plowed under in May and June. To some extent grasses and weeds in waste places are cut and, in order that they may rot more quickly, are worked or pushed into the mud with the worker's feet in flooded fields of growing rice. Commercial fertilizer mixtures in the form of bean cake or mineral mixtures are only sparingly used.

There are various methods of lifting the water from the canals to the fields or from one paddy field to another but possibly of most general use is an endless chain of wooden paddles running in a wooden trough, one end of which is in the canal and the other elevated on to the paddy field. Cattle or water buffalo turn the sweep of the horizontal wheel geared in turn to the endless chain. The entire construction is of wood. Human tread arrangements and scooping buckets are other methods. In recent years use has been made of pumps with oil engines to pump water from the canals on to the paddy fields. The pumps are installed on boats and the owners take the contracts for pumping water for the season.

CROPPING SYSTEMS AND REGIONAL AGRICULTURE IN CHINA, CONT'D

The Central Yangtze Basin region in general consists of valleys, river plains and low hills, mostly north of the main river, as distinguished from the characteristic delta and canal region of the lower Yangtze area. Included in the central region are much of the basins of the Hwai and Han Rivers in the provinces of Anhwei, southeastern Honan and Hupeh. The Han Valley in southern Shensi is also included because of the similarity of its cropping system to that of the western part of Hupeh. There is considerable land in the central reaches of the Yangtze River south of Hankow which is very flat and low and is subject to floods from the Yangtze during May and June. The higher and better drained lands north of the Yangtze, however, are far more extensive and representative of the central region.

In general, agricultural conditions in the central Yangtze Basin are quite similar to those of the Yangtze Delta. The topography of the land and insufficient irrigation water, however, have reduced the percentage of rice and altered the proportions of other crops. The valleys and bases of the hills and slopes may be planted to rice in the spring and summer, but on the higher land, cotton, corn, beans, kaoliang or other non-irrigated crops are grown. Cotton is very extensively planted and corn is an important crop in the more hilly western half of the region. Winter cropping is almost complete. The winter wheat acreage is of predominating importance, running as high as 80 per cent in many localities; other fall or winter planted crops are peas, frequently planted with winter wheat and broad beans and barley. There is some rapeseed, and opium appears in southern Shensi.

Some rice is set out on land which is left idle all winter, but usually the flooding of paddy fields and planting of summer crops follow the harvest of winter crops in May and early June. The rice acreage in general varies from 20 to 55 per cent of the total crop land. In the parts of Anhwei and Honan near the entirely dry land cropping area, there are smaller percentages of rice and substantial amounts of the Great Plain crops of kaoliang, beans, sweet potatoes and sesame. To the south and southeast, however, near the Yangtze, the lower land and better irrigation materially enlarge the place of rice in the cropping scheme and in some places rice uses as high as 80 per cent of the crop land. Cotton is grown in practically every locality of the Yangtze Basin. That region is the most important cotton area in China. In many parts of Hupeh from 15 to 30 per cent of the crop land is devoted to cotton. Exports to the coast from Hankow and Shashi, in Hupeh, have been as high as 640,000 bales in some years. The western half of Hupeh and particularly the upper Han Valley in Hupeh and southern Shensi is a very extensive corn growing region, running from 20 to 40 per cent of the land in some districts. Still further west, corn is next to rice in importance as a summer crop.

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West Central China includes the provinces of Szechwan, Kweichow, Yunnan and western Hunan. It is a mountainous country, confining agriculture to valleys, narrow plains and foothills. To the extreme south, in Yunnan, plains and valleys at high altitudes drop to low levels and in the course of one day's travel on a slow train toward the French Indo-Chinese border, conditions change from a very temperate to a distinctly tropical environment. In Szechwan, an area known as the Red Basin is the main agricultural district. The red sandstone formation has been terraced almost completely to hold water for paddy rice. Other crops are grown extensively. Few provinces in China have such a variety of winter and summer crops as has Szechwan, capable of maintaining a population self-sufficient in the matter of agricultural products from other provinces. The population is placed at about 50,000,000. The plain of Chengtu is included in the so-called Red Basin and is considered by some geographers to be among the world's most populous and productive pieces of land. It is a triangular tract about 40 miles wide and 90 miles long and supports about 5,000,000 people. The Plain is most completely irrigated and drained, and is worked in small patches. Owner-operated farms run about 12 acres, while tenants usually cultivate about 5 acres.

The provinces of west central China are characterized by a certain diversity of winter crops and by rice and corn as summer crops. In Szechwan the lowest terraces or fields in which water is collected in the spring do not produce a winter crop but are used for rice exclusively. In marked contrast to the central Yangtze Basin, winter wheat in Szechwan probably does not occupy more than 20 to 25 per cent of the land and in Kweichow and Yunnan, much less. It is outranked by opium poppies in Kweichow and by both broad beans and poppies in Yunnan. West China is recognized as the main opium producing area in China. Rye seed, from which oil is extracted for cooking, is important in Szechwan and western Hunan, but the acreages is small in Kweichow and Yunnan. Broad beans also are an extensive crop in west China as a winter crop. In Yunnan the harvests of winter crops are pretty well completed in April and in Szechwan in May. The wood oil trees on the slopes in Szechwan and Hupeh are the source of a large export trade in wood oil.

In general, rice is grown in the provinces of west central China during the summer to the extent that rainfall, irrigation facilities or character of the land will permit. In the province of Szechwan these limitations are considerable and there is quite a diversity of farming conditions and summer crops. There are occasional plains without irrigation, such as at Tsinning, where there is no rice whatsoever and where kaoliang, corn, hemp, peanuts and cotton constitute the summer production.

CROPPING SYSTEMS AND REGIONAL AGRICULTURE IN CHINA, CONT'D

On the irrigated Chengtu Plain, however, fully 80 per cent of the crop land is in rice. More representative of the Szechwan Province, because of the prevailing hilly country, are the much smaller percentages of rice, 25 to 40 per cent in the valley lands and lower terraces where irrigation water can be secured by various means. In this province, where the amount and the seasonal distribution of the rainfall is barely sufficient to grow rice, the ingenuity of the Chinese farmers in making the most of the available water supply is well demonstrated. A very common method of securing water for flooding purposes is to collect and store the run-off from nearby slopes or hills in ponds or reservoirs.

In the important Szechuan province, the planting or setting out of summer crops gets underway in the latter half of May, with a considerable variety in evidence. Corn is next to rice in importance. Other dry land crops extensively grown are sweet potatoes, peanuts, soy beans and kaoliang. In some localities the cotton acreage is large, with sugar cane in evidence in certain districts. In most of Kweichow, summer crops seem to consist almost exclusively of rice and corn. The valleys grow rice and the mountainsides mostly corn. There is a noticeable absence of other crops. Beans are interplanted with corn in some localities and sweet potatoes, peanuts, buckwheat and tobacco appear in limited volume. Damage from excessive autumn rains is not uncommon. In extreme western Kweichow, higher altitudes make fall sown oats important, with beans, potatoes and buckwheat as the leading summer crops. In Yunnan, better rainfall raises the volume of rice and reduces the corn production, with some attention given to potatoes and buckwheat.

Southeast China, consisting of the provinces of Chekiang (southern part), Kiangsi, Fukien, Kwantung, Hunan (eastern part) and Kwangsi, is cut up by numerous mountain ranges and hills. The largest areas of level land are found in the river deltas. Agriculture is quite largely confined to the river valleys and deltas. Tropical or semi-tropical growing conditions prevail throughout practically the entire growing area. There is considerable terracing of hillsides where soil formations permit. For the region as a whole, the annual rainfall seems to vary from 53 inches to 68 inches, but there is evidence that among the mountains in southern Kiangsi it reaches 77 inches. The annual amount of rainfall, however, does not appear to be as important a factor in explaining the differences in the cropping system as does its seasonal distribution. The latter point varies materially and modifies the time of planting, influences the use of early and late varieties of rice and determines to a considerable degree the extent of double cropping of rice.

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From a cropping standpoint, entire south China is primarily a rice growing region, although in the province of Kiangsi substantial amounts of rapsesed and in a few localities small percentages of winter wheat are grown during the winter. Varying amounts of sweet potatoes, sugar cane, beans and other crops, are grown throughout the region during the summer or autumn. It is difficult, in describing prevailing cropping practices, to generalize for a particular province in this region. The variety of conditions in each, irrigated and non-irrigated plains, narrow and wide valleys, with and without water supplies for a second crop of rice, plain and mountainside farming and other varying conditions, have given rise to variations in the cropping system to suit local conditions. In general, however, winter cropping is of very minor importance and two crops of rice in one year are grown wherever rainfall or irrigation facilities permit.

In the valleys in western Hunan and Kwangsi, only single crops of rice are reported but on the plains near Tung Ting Lake in north eastern Hunan two crops are realized. All along the Kan River in Kiangsi and for some distance up the valleys of its tributaries two crops of rice are harvested but at other locations only one. In the mountainous valleys of western Fukien and eastern Kiangsi the spring rains are usually sufficient for an early crop of rice but in July the rainfall drops off sharply and being insufficient for a second crop of rice, sweet potatoes and beans follow the "early rice" crop. In southern Kiangsi and Hunan two rice crops are secured from about half the fields and still further south in Kwangtung and Kwangsi rainfall combined with irrigation enables two crops of rice on most of the land.

The long growing season enables many harvests of vegetables within a year, particularly in districts growing vegetables for city markets. With minor exceptions, however, production does not exceed two harvests of cereal crops. As in the Yangtze Valley, a certain amount of clover (*Astragalus sinensis*) is grown during the winter months to be plowed under in the spring. For the entire region it is quite probable that since the stations from which the reports have been received are located near the rivers and accordingly on plains where agriculture is more highly developed, the mountainside agriculture is incompletely represented in the returns. Moreover, the reports cover field crops almost exclusively and accordingly the acreage in tea, oranges, other fruits, and other special crops of southeast China have been omitted.

Early and late rice crops

Among the reports from southern Chekiang, western Fukien and northern Kiangsi Provinces, there is frequent reference to early and late crops of rice. The words "early" and "late", however, seem to have

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different meanings for different localities. In certain districts of eastern Chekiang, northern Kiangsi, and northern Fukien, for example, the terms "early" and "late" rice cover a modified form of double cropping or two harvest of rice from the same field each year. In the mountainous valleys of western Fukien and eastern Kiangsi, however, there is an early harvest from certain types of land and a late harvest from other types of land. The latter practice is associated with the occurrence of heavy rains as early as February and March and a sharp reduction of rainfall in July.

Fields depending entirely upon rainfall use the early rains of March to June for an early crop of rice which is harvested in July or August. Because of the insufficiency of rainfall and irrigation water in these districts, soybeans and sweet potatoes are planted for second crops. Such low lying land as can be irrigated, however, is planted in June to late rice varieties which for food purposes are considered superior. This late rice is harvested in October. The floodable land is seldom planted to anything but rice and produces only one harvest a year. Since the bean crop is the second crop following an early rice harvest, it becomes an important part of the farm production. In one locality there is as large an acreage of sweet potatoes as of beans, after the early rice crop is harvested. Taro, peanuts and water-chestnuts are among the minor crops. Modifications of this cropping system may occur at various places in Kiangsi and Hunan.

Second crops of rice

As previously stated the terms "early" and "late" rice in certain districts cover a modified form of double cropping, or two rice harvests, from the same field each year. In eastern Chekiang an early variety of rice is set out around May 1 in rows somewhat wider apart than normal planting. About ten days to a month later a late variety is set out between the growing rows of the earlier planted and quicker maturing variety. The early rice is ready to harvest in early July after which time the late rice occupies the same land completely and comes to maturity in October. There are indications that this practice of inter-planting alternate rows of early and late rice varieties also occurs to some extent in the northern part of the provinces of Kiangsi and Fukien. At Yungtai, in northern Fukien, the statement is made that 50 per cent of the farm land grows two crops of rice, both planted in May. The first crop ripens in July and the second crop in November. This quite plainly indicates a system of inter-planting similar to that described for eastern Chekiang. Since it is a form of double cropping, it no doubt also occurs at other places in Kiangsi and Fukien where the reports indicate first and second crops of rice. In general, however, the term "first" and "second" or "two crops", as used in this paper, refer, more specifically to two complete plantings and harvests.

CROPPING SYSTEMS AND REGIONAL AGRICULTURE IN CHINA, CONT'D

In several districts in northern Hunan, where there are irrigation facilities, two crops of rice are regularly harvested. In Kiangsi, where rainfall is more favorable than in Hunan, there are two rice harvests not only on the plains around Lake Poyang in the north but in the valleys or flood plains of the Kan River flowing through the center of the provinces and far up the valleys of its tributaries to the east and to the west. The mountainous nature of Fukien Province greatly limits the cultivated area and the opportunities for two crops of rice but from the delta lands along the coast of both Fukien and Chekiang Provinces the farmers secure two rice harvests. Finally in Kwangtung and eastern Kiangsi tropical rains and irrigation from canals keep the paddy fields flooded from March to November and tropical heat matures crops of rice harvested in July and in November. The southeastern corner of Yunnan Province, consisting of the upper valley of the Red River of French Indo-China, grows two rice crops a year. One is planted in the dry and the other in the rainy season. The rice crops here are mainly under irrigation with the water supply coming from the mountain streams.

In northern Kiangsi, where double rice cropping is not so extensive as farther south, there is a substantial amount of winter cropping, chiefly of rapeseed, which is grown on about 15 per cent of the farm acreage. Throughout this region there is also a small percentage of turnips. In the more southern provinces, however, winter cropping seems to be largely confined to turnips and to vegetables of which a larger acreage than elsewhere seems to be required in view of the many large cities and very dense population. There are frequent references to sweet potatoes being cultivated on the sides of mountains and along the coast in northern Fukien, they seem to occupy fully one-third of the crop land in a number of localities. Reports reveal the prominence of the sugar cane industry in southern Kiangsi, southern Fukien and in various places in Kwangsi and Kwangtung. Hoihow on the island of Hainan, a commercially important sugar cane district, reports 20 per cent of the crop land in sugar cane. Peanuts seem to be grown here and there throughout southeastern China. Kwangtung tobacco is widely known and reaches a considerable production at a number of places in the Canton Delta and at Kongmoon it appears to take the place of the first crop of rice.

The Canton Delta or the delta of the West River in southern Kwangtung, is supplied with innumerable canals and streams and is one of the most intensive farming districts in China. The first rice crop is set out in March and harvested in July and the second crop, transplanted in July, is in turn harvested in October and November. The mulberry and silk cocoon industry is a very important item of farm production in this delta. Considerable bean cake and mineral fertilizers, mostly ammonium sulphate, are used in the delta district. Transportation costs quickly restrict the use of commercial fertilizers in many other parts of China but here a very intensive farming district is reached by cheap ocean and canal transportation and it represents the largest single district as a market for commercial fertilizers in China. Possibly the rainfall in the Canton Delta is more dependable than in any other region in China, averaging around 70 inches per annum. Rice is the dominant crop and is raised wherever there is level land.

BREAD GRAINS: Winter acreage in specified countries,
average 1909-1913, annual 1928-1931

Crop and countries reporting	Average	Harvest year				Per cent 1931 is of 193
	1909-1913	1928	1929	1930	1931	
WHEAT	1,000	1,000	1,000	1,000	1,000	
acres	acres	acres	acres	acres	acres	
United States	a/ 28,382	a/ 36,213	a/ 40,059	a/ 38,608	40,432	104.7
Canada	b/ 1,019	1,033	885	1,042	894	85.8
Total (2).....	29,401	37,246	40,944	39,650	41,326	104.2
Belgium.....	396	408	356	414	389	94.0
Luxemburg.....	27	37	21	25	25	100.0
France.....	16,500	12,802	12,673	12,990	12,494	96.2
Spain.....	9,547	10,479	10,622	10,530	10,872	103.2
Italy.....	11,793	12,318	12,272	11,759	11,893	101.1
Germany.....	c/ 4,029	a/ 3,836	a/ 3,632	a/ 3,997	4,324	108.2
Czechoslovakia.....	1,718	1,765	1,932	2,022	1,978	97.8
Hungary.....	3,712	4,131	3,735	3,993	3,954	99.0
Yugoslavia.....	c/ 3,982	4,478	5,075	5,246	5,239	99.9
Bulgaria.....	2,409	a/ 2,782	a/ 2,634	2,908	2,908	100.0
Rumania.....	9,515	a/ 7,281	a/ 6,130	a/ 6,873	6,154	89.5
Lithuania.....	211	271	345	405	410	101.2
Finland.....	8	26	26	30	32	106.7
Total Europe (13).....	63,847	60,614	59,453	61,192	60,672	99.2
Algeria.....	3,521	d/ 3,656	d/ 3,795	d/ 3,944	3,081	78.1
Tunis.....	c/ 1,310	1,730	1,730	1,730	a/ 1,730	100.0
Total Africa (2).....	4,831	5,386	5,525	5,674	4,811	84.8
India (f).....	c/ 29,224	31,678	31,504	30,468	31,609	103.7
Total above countries (18).....	127,303	134,924	137,426	136,984	138,418	101.0
RYE						
United States.....	2,236	3,480	3,331	3,722	3,793	101.9
Canada.....	117	599	687	818	944	115.4
Total (2).....	2,353	4,079	4,018	4,540	4,737	104.3
Belgium.....	648	567	567	564	553	98.0
Luxemburg.....	26	15	18	22	22	100.0
France.....	3,095	1,900	1,936	1,905	1,745	91.6
Spain.....	1,938	1,384	1,519	1,446	1,544	106.8
Germany.....	c/ 12,713	11,229	11,484	11,462	10,379	90.6
Czechoslovakia.....	2,605	2,480	2,690	2,609	2,493	95.6
Yugoslavia.....	732	496	602	625	505	80.8
Bulgaria.....	542	458	492	541	583	107.8
Rumania.....	b/ 1,286	637	721	914	865	94.6
Lithuania.....	1,749	1,161	1,113	1,196	1,136	95.0
Finland.....	589	550	563	568	556	97.9
Total Europe (11).....	25,973	20,877	21,705	21,852	20,381	93.3
Algeria.....	3	4	3	3	5	166.7
Total above countries (14).....	28,329	24,960	25,726	26,395	25,123	95.2

a/ Area harvested. b/ Four-year average. c/ Total crop. d/ Final estimate.

e/ Sowings to February 1. f/ April estimate.

WHEAT: Closing prices of July futures

Date	Chicago		Kansas City		Minneapolis		Winnipeg		Liverpool		Buenos Aires a/	
	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Mar. 28	109	60	102	53	109	67	112	59	115	63	c/103	c/ 47
Apr. 4	117	63	110	56	115	b/68	119	b/58	120	b/63	c/109	c/ 48
11	112	63	104	56	112	72	116	62	120	64	c/110	c/ 48
18	107	65	99	58	106	73	111	65	115	69	c/106	c/ 51
25	105	60	97	53	105	72	109	60	113	66	c/105	c/ 49
May 2	102	64	95	57	102	74	107	63	112	66	c/103	c/ 49
9	103	64	96	57	103	72	108	63	113	68	c/103	c/ 48
16	107	60	100	54	106	70	112	61	116	66	c/105	c/ 48
23	106		99		105		110		116		104	
June 30	109		101		108		114		118		105	
June 6	106		99		105		113		117		105	
13	99		92		99		104		113		103	

a/ Prices are of day previous to other prices.

b/ Prices are of Apr. 2.

c/ June futures.

WHEAT: Weighted average cash prices at stated markets

Week ended	All classes and grades		No. 2 Hard Winter		No. 1 Dk. N. Spring		No. 2 Amber Durum		No. 2 Red Winter		Western White	
	six markets		Kansas City	Minneapolis	Minneapolis	Minneapolis	Minneapolis	Minneapolis	St. Louis	St. Louis	Seattle	a/
	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931
Mar. 27	100	72	100	71	112	77	97	72	117	79	110	66
Apr. 3	103	74	102	72	114	79	101	73	120	79	117	67
10	108	74	107	73	118	79	103	72	120	80	112	68
17	102	75	101	74	113	80	98	75	117	80	110	68
24	99	74	98	73	109	80	94	74	114	80	107	69
May 1	99	75	97	73	110	80	96	73	113	79	106	69
8	97	76	96	73	108	82	94	76	111	80	104	69
15	101	76	98	73	110	84	98	78	115	80	105	b/69
22	102		100		111		99		115		104	
June 29	102		102		110		99		115		105	
June 5	103		101		111		98		113		104	
12	100		98		110		95		108		103	

a/ Weekly average of daily cash quotations basis No. 1 sacked 30-days delivery.

b/ Preliminary.

FEED GRAINS: Acreage, average 1909-1913, annual 1928-1931

Crop and countries reported in 1931 ^{a/}	Average 1909-1913	1928	1929	1930	1931	Per cent 1931 is of 1930
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Per cent
BARLEY						
United States	7,620	12,598	13,068	12,437	b/13,932	112.0
Canada	1,574	4,881	5,926	5,559	4,734	85.2
Total N.Amer. (2)	9,194	17,479	18,994	17,996	18,666	103.7
Belgium	88	77	63	84	70	83.3
Luxemburg	3	7	14	7	7	100.0
France	1,987	1,756	1,946	1,835	1,955	106.5
Spain	3,510	4,506	4,489	4,390	4,390	100.0
Germany c/	527	451	446	436	494	101.6
Yugoslavia c/	618	545	607	838	611	72.9
Czechoslovakia	2,275	1,820	1,836	1,830	1,758	96.1
Bulgaria c/	390	516	364	514	514	100.0
Rumania c/	211	265	324	323	248	76.8
Poland c/	94	191	207	142	143	100.7
Total Europe (9)	9,703	10,134	10,296	10,249	10,190	99.4
Tripolitania.....	d/ 330	148	d/ 260	247	371	150.2
Algeria	3,395	3,411	3,536	3,566	3,042	85.3
Tunis	1,228	1,459	1,248	988	988	100.0
Total Africa (3)	4,953	5,018	5,044	4,801	4,401	91.7
Total N.Hemis. (14)	23,350	32,631	34,334	33,046	33,257	100.6
Est. N. Hemis. total excl.						
Russia and China	64,300	69,900	74,000	72,100		
OATS						
United States	37,357	41,734	40,043	41,598	b/44,318	106.5
Canada	9,597	13,137	12,479	13,259	13,336	100.6
Total N.Amer. (2)	46,954	54,871	52,522	54,857	57,654	105.1
Luxemburg	77	71	77	70	70	100.0
France	10,084	8,657	8,510	8,537	8,631	100.9
Spain	1,276	1,965	1,839	1,768	1,693	95.8
Czechoslovakia	2,506	2,141	2,150	2,140	2,116	98.9
Total Europe (4)	13,943	12,834	12,576	12,535	12,510	99.8
Algeria	449	601	639	633	544	85.9
Tunis	133	104	133	99	99	100.0
Total Africa (2)	582	705	772	732	643	87.8
Total N.Hemis. (3)	61,479	68,410	65,870	68,124	70,507	114.9
Est. N. Hemis. total excl.						
Russia and China	97,800	101,000	100,000	101,200		

a/ Figures in parenthesis indicate the number of countries included.

b/ Intentions to plant. c/ Winter acreage only.

d/ Estimated.

FEED GRAINS: Production, average 1909-10 to 1913-14, annual 1927-28 to 1930-31

Crop and countries reported in 1930-31 a/	Average 1909-10 to 1913-14	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Per cent 1930-31 is of 1929-30
CORN						
United States	2,712,564	2,763,093	2,818,901	2,614,132	2,081,048	79.6
Total N. America (3)....	2,863,023	2,849,194	2,909,682	2,678,946	2,139,021	79.8
Europe, 10 coun. prev. reported and unchanged..	540,511	445,093	346,416	648,253	530,148	81.8
Bulgaria, revised	26,277	20,954	20,272	36,995	34,062	93.1
Poland	2,822	3,519	3,348	3,752	3,299	87.9
Total Europe (12)	569,610	469,566	370,036	688,999	567,509	82.4
North Africa (4).....	5,526	10,111	12,120	12,618	12,000	95.1
Asia, 2 coun. prev. reported	41,300	105,214	70,934	64,961	63,997	98.5
India.....	82,620	76,760	90,240	82,440	97,680	112.5
Total Asia (3).....	123,920	181,974	161,174	147,401	161,677	109.7
Total N. Hemis. (22)....	3,562,079	3,510,845	3,453,012	3,527,964	2,880,207	81.6
S. Hemis. (3) :.....	225,215	380,120	298,455	329,539	431,317	130.9
Total above coun. (24)....	3,787,294	3,890,965	3,751,467	3,857,503	3,311,524	85.8
Est. world total excl. Russia	4,138,000	4,348,000	4,280,000	4,308,000	3,812,000	88.5
BARLEY						
United States	184,812	265,882	357,487	302,892	325,893	107.6
Total N. America (2) ..	230,087	362,820	493,878	405,205	461,053	113.8
Europe, 23 coun. prev. reported and unchanged ..	696,202	654,979	739,787	824,276	753,379	91.4
Belgium, revised	4,446	4,169	4,364	2,834	3,825	135.0
Total Europe (29).....	700,654	659,148	744,151	827,110	759,204	91.8
North Africa (5).....	107,467	91,201	117,560	113,487	81,902	72.2
Asia, 4 coun. prev. reported	134,627	135,164	131,484	144,238	136,549	94.7
India	145,496	119,047	97,720	117,599	106,867	90.9
Total Asia (5).....	280,123	254,211	229,204	261,837	243,416	93.0
Total N. Hemis. (41)....	1,318,531	1,367,380	1,584,723	1,607,639	1,545,575	96.1
S. Hemis. (4).....	11,023	22,061	25,120	26,085	20,420	78.5
Total above coun. (45)...	1,329,554	1,389,441	1,609,313	1,633,724	1,566,004	95.9
Est. world total excl. Russia and China.....	1,424,000	1,483,000	1,703,000	1,747,000	1,682,000	96.3

Continued-

FEED GRAINS: Production, average 1909-10 to 1913-14, annual 1927-28
to 1930-31 - Cont'd

Crop and countries reported in 1930-31 a/	Average 1909-10 to 1913-14	1927-28	1928-29	1929-30	1930-31	Per cent 1930-31 is of 1929-30
OATS	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Per cent
United States	1,143,407	1,182,594	1,439,407	1,228,369	1,402,026	114.1
Total N. America (2) ..	1,517,077	1,649,789	1,919,820	1,528,885	1,851,621	121.1
Europe, 27 coun. prev. reported and unchanged.	1,884,828	1,701,461	1,835,765	2,011,920	1,686,571	83.8
Belgium, revised	43,964	46,102	48,524	51,487	38,223	74.2
Total Europe (28)	1,928,792	1,747,563	1,884,289	2,063,407	1,724,794	83.6
North Africa (3)	17,631	13,598	18,727	21,643	17,797	82.2
Asia (2)	5,103	13,587	12,040	11,763	13,108	111.4
Total N. Hemis. (35) ...	3,468,603	3,424,537	3,834,876	3,625,698	3,607,320	99.5
S. Hemis., 4 coun. prev. reported and unchanged.	83,170	66,230	80,719	86,118	63,682	73.9
Chile, revised	3,333	6,413	7,125	10,404	5,594	53.8
Total S. Hemis. (5) ..	86,503	72,643	87,844	96,522	69,276	71.8
Total above coun. (40) ..	3,555,106	3,497,180	3,922,720	3,722,220	3,676,596	98.8
Est. world total excl. Russia and China	3,601,000	3,526,000	3,960,000	3,761,000	3,715,000	98.8

a/ Figures in parenthesis indicate the number of countries included.

- - - - - RUSSIA: Fruit exports by kinds; 1926 to 1930

Kind of fruit	Oct.-Sept.	Oct.-Sept.	Jan.-Dec.	Jan.-Dec.
	1926-27	1927-28	1929	1930
	Tons	Tons	Tons	Tons
Apples	4,975	5,585	14,100	6,440
Grapes	--	--	1,135	545
Pears	775	445	305	40
Other	140	850	570	125
Total	5,890	6,830	16,110	7,150

Fruit Notes, Empire Marketing Board, long tons.

FEED GRAINS: Movement from principal exporting countries

Item	Export for year		Shipments 1930-31, week ended a/			Exports as far as reported		
	1928-29 b/	1929-30 b/	Apr. 25	May 2	May 9	July 1 to and incl.	1929-30	1930-31
BARLEY, EXPORTS:								
Year beginning	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels		1,000 bushels	1,000 bushels
July 1								
United States	56,996	21,544	21	62	0	May 9	20,142	8,841
Canada	38,668	6,396				Apr. 30	6,312	4,125
Argentina	8,591	5,990	c/ 317	c/ 242		May 2	c/ 5,625	c/ 8,933
Danub.coun.c/	19,408	66,092	550	1,233		May 2	61,075	63,242
Total	123,663	100,022					93,154	65,138
OATS, EXPORTS:								
Year beginning								
July 1								
United States.	16,251	7,966	4	3	1	May 9	7,322	2,341
Canada	19,927	4,694				Apr. 30	4,200	5,911
Argentina	25,690	20,181	c/1,433	c/1,228		May 2	c/ 15,902	c/ 34,77
Danub.coun.c/	49	1,453	0	49		May 2	1,112	2,43
Total	61,917	34,294					28,536	45,23
Exports for year		Shipments 1930-31, week ended a/			Exports as far as reported			
1928-29	1929-30 b/	Apr. 25	May 2	May 9	Nov. 1 to and incl.	1929-30	1930-31	
CORN, EXPORTS:								
Year beginning	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels		1,000 bushels	1,000 bushels
November 1								
United States.	41,594	8,526	23	29	25	May 9	5,302	1,59
Danub.coun.c/.	531	49,817	197	454	May 2	20,400	11,85	
Argentina	203,071	c/173,155	c/5,157	c/9,106	c/5,669	May 9	74,506	c/127,63
Union of South Africa d/ ...	22,457	30,120	171	129	May 2	6,574	3,94	
Total	267,653	261,618					106,782	145,02
United States imports	349	1,262					231	69
Compiled from official and trade sources.								

a/ The weeks shown in these columns are nearest to the date shown.

b/ Preliminary.

c/ Trade sources.

d/ Unofficial reports of exports to Europe from South and East Africa.

FEED GRAINS: Weekly average price per bushel of corn, oats and barley at leading markets ^{a/}

Week end- ed	Corn								Oats		Barley	
	Chicago				Buenos Aires				Chicago		Minneapolis	
	No. 3 Yellow		Futures		Futures				No. 3 White		Special No. 2	
	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930	1931
Feb. 13	84	63	92	68	63	30	63	30	45	32	58	45
20	81	60	89	65	62	31	62	31	43	31	57	46
27	80	59	87	64	63	33	61	32	42	31	57	43
Mar. 6	79	58	86	64	61	33	61	32	43	31	59	44
13	74	61	81	64	58	36	58	33	41	31	55	43
20	80	61	84	64	57	38	57	34	43	31	55	43
27	81	60	84	63	61	34	60	32	43	31	57	46
Apr. 3	83	59	86	62	62	32	61	32	44	31	58	44
10	83	59	85	61	65	33	64	32	44	30	57	45
17	81	60	83	61	61	33	61	33	43	31	56	49
24	82	58	82	59	61	33	61	33	42	30	57	50
May 1	79	54	80	55	60	31	60	31	41	27	55	47
8	79	56	79	57	59	30	59	31	41	29	56	47

^{a/} Cash prices are weighted averages of reported sales; future prices are simple averages of daily quotations.

GERMANY: Farm stocks of barley, oats and potatoes,
April 15, 1930 and 1931
(For wheat and Rye farm stocks, same dates, see "Foreign Crops and Markets."
May 18, 1931. p. 708.

Year and crop	Total farm stocks		Available for sale		Production
	Quantity	Percent of crop	Quantity	Per cent of crop	
1930	1,000	Per cent	1,000	Per cent	1,000
Barley	bushels		bushels		bushels
Winter.....	2,415	13.8	332	1.9	17,497
Spring.....	14,917	11.6	5,529	4.3	128,591
Oats.....	174,970	34.4	50,863	10.0	508,633
Potatoes.....	365,195	24.8	76,573	5.2	1,472,559
1931					
Barley					
Winter.....	1,615	7.4	153	0.7	21,829
Spring.....	9,420	8.6	1,424	1.3	109,540
Oats.....	124,700	32.0	19,484	5.0	389,688
Potatoes.....	380,729	22.0	51,918	3.0	1,730,585

Compiled from official reports and estimates of the German Agricultural Council.

May 25, 1931

Foreign Crops and Markets

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COTTON: Price per pound and weekly sales of representative raw cottons at Liverpool on May 15, 1931 with comparisons

Description	1931							1930
	April			May			May	
	2a/ Cents	10 Cents	17 Cents	24 Cents	1 Cents	8 Cents	15 Cents	16 Cents
American								
Middling.....	11.68	11.33	11.25	11.40	11.03	10.93	10.67	17.32
Low Middling.....	10.77	10.42	10.34	10.48	10.12	10.04	9.75	15.49
Egyptian (Fully good fair)								
Sakellaridis.....	18.65	18.25	17.24	16.83	16.56	16.83	16.83	28.59
Upper.....	13.87	13.50	13.20	13.00	12.71	12.94	12.75	20.84
Brazilian (Fair)								
Ceara.....	11.58	11.23	11.15	11.29	10.93	10.83	10.56	15.90
Sao Paulo.....	11.58	11.23	11.15	11.29	10.93	10.83	10.56	15.90
East Indian								
Broach (Fully good)...	8.82	8.62	8.76	8.78	8.44	8.54	8.27	12.06
Oonra #1 Fine.....	8.41	7.81	8.35	8.37	8.04	8.13	7.83	11.25
Sind (Fully good)....	7.62	7.42	7.36	7.38	7.05	7.14	6.87	9.43
Peruvian (Good)								
Tanguis.....	14.11	13.57	13.48	13.63	13.43	13.16	12.90	19.55
Mitafifi.....	15.21	14.70	14.19	13.69	14.65	14.70	14.70	20.78
Sales b/	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
American.....	10,250	9,800	14,750	14,500	14,750	11,750	12,250	10,750
Total, (all sorts)....	27,000	20,000	31,000	30,000	28,000	24,000	40,000	20,000

Foreign Agricultural Service Division.

a/ Thursday price—market closed Friday. b/ For week ended on date given, in running bales, and subject to revision.

RUSSIA: Cotton acreage and production, 1926-1931

Year	Area	Production a/
	1,000 acres	1,000 acres
1926.....	1,620	774
1927.....	1,851	1,092
1928.....	2,257	1,250
1929.....	2,595	1,310
1930.....	3,840	1,850
1931.....	5,683	

Compiled from official sources and International Institute of Agriculture.

a/ Bales of 478 pounds net.

GRAINS: Exports from the United States, July 1-May 9, 1929-30 and 1930-31

PORK: Exports from the United States, January 1-May 9, 1930 & 1931

Commodity	July 1 - May 9		Week ending				May 9
	1929-30	1930-31	Apr. 18	Apr. 25	May 2	May 9	
	bushels	bushels	bushels	bushels	bushels	bushels	bushels
GRAINS:							
Wheat a/	1,000	1,000	1,000	1,000	1,000	1,000	1,189
Wheat flour b/	52,814	47,559	776	672	639	498	
Rye	2,528	149	--	--	--	--	
Corn	8,017	2,397	21	23	29	25	
Oats	4,504	837	4	4	3	1	
Barley a/	20,142	8,841	313	21	62	--	
	Jan. 1 May 9						
	1930	1931					
PORK:							
Hams & shoulders, incl.	1,000	1,000	1,000	1,000	1,000	1,000	
Wiltshire sides	pounds	pounds	pounds	pounds	pounds	pounds	
Bacon, incl. Cumberland sides	46,976	24,030	379	673	1,427	895	
Lard	51,187	20,718	254	2,271	1,966	261	
Pickled pork	271,821	239,509	8,293	8,812	7,494	4,369	
	11,376	6,009	58	65	75	142	

Compiled from official records - Bureau of Foreign and Domestic Commerce.

a/ Included this week: Pacific ports wheat 149,000 bushels, flour 23,000 barrels, from San Francisco barley --- bushels, rice 500,000 pounds. b/ Includes flour milled in bond from Canadian wheat, in terms of wheat.

WHEAT, INCLUDING FLOUR: Shipments from principal exporting countries as given by current trade sources

Country	Total shipments		Shipments, weeks ending			Total shipments July 1 to and incl. May 9	
	1928-29	1929-30	Apr. 25	May 2	May 9	1929-30	1930-31
	bushels	bushels	bushels	bushels	bushels	bushels	bushels
North America a/	540,496	316,928	4,432	7,519	9,996	269,120	310,819
Canada, 4 markets b/	453,649	193,380	6,130	6,398	9,184	153,166	227,908
United States	162,448	149,819	3,293	1,153	1,687	133,322	110,614
Argentina	215,292	165,048	3,712	4,250	3,783	149,730	87,707
Australia	110,868	64,066	5,604	3,784	4,224	56,316	119,392
Russia	8	5,672	376	0	1,040	4,608	88,460
Danube and Bulgaria c/	2,712	18,384	64	200	216	17,520	13,512
British India	d/1,064	1,832	0	0	0	192	5,728
Total e/	870,440	571,930	14,188	15,753	19,209	497,486	625,618
Total European ship.	693,829	479,608	10,200	--	--	389,776	490,700
Total ex-European shipments a/	217,644	138,960	4,592	--	--	119,812	138,080

Compiled from trade sources. a/ Broomhall's Corn Trade News. b/ Fort William, Port Arthur, Vancouver, and Prince Rupert. c/ Black Sea shipments only. d/ Net imports 1928-29 were 21,861,000 bushels; for 1929-30 were 2,000,268 bushels. e/ Total of trade figures include North America as reported by Broomhall's.

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Foreign Crops and Markets

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BUTTER: Prices in London, Berlin, Copenhagen and New York, to cents per pound
(Foreign prices by weekly cable)

Market and item	May 15, 1930	May 7, 1931	May 14, 1931
	Cents	Cents	Cents
New York, 92 score.....	34.30	23.50	24.50
Copenhagen, official quotation	36.14	23.09	23.09
Berlin, la quality	37.23	25.93	26.36
London: a/			
Danish	28.29	25.64	25.75
Dutch, unsalted	28.24	24.34	24.77
New Zealand	27.31	22.70	23.68
New Zealand, unsalted	31.50	23.90	24.34
Australian	27.37	22.27	23.02
Australian, unsalted	27.37	23.03	23.47
Argentine, unsalted	36.94	22.38	22.81
Siberian	26.61	21.51	21.62

Quotations converted at par of exchange. a/ Quotations of following day.

EUROPEAN LIVESTOCK AND MEAT MARKETS
(By weekly cable)

Market and item	Unit	Week ended		
		May 14, 1930	May 6, 1931	May 13, 1931
GERMANY:				
Receipts of hogs, 14 markets	Number	69,787	70,911	78,579
Prices of hogs, Berlin.....	\$ per 100 lbs.	13.67	9.34	9.24
Prices of lard, tcs., Hamburg	"	12.12	10.47	10.41
UNITED KINGDOM:				
Hogs, certain markets, England	Number	9,789	12,061	11,311
Prices at Liverpool:				
Prime steam western lard a/..	\$ per 100 lbs.	11.84	9.50	9.67
American short cut green hams	"	20.97	16.95	16.95
American green bellies	"	18.25	14.12	14.12
Danish Wiltshire sides	"	21.40	17.16	18.03
Canadian green sides	"	b/	b/	b/

a/ Friday quotations b/ No quotation.

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